

DEPARTMENT OF AGRICULTURE, BENGAL.

ANNUAL REPORT

OF THE

CHINSURAH FARM

FOR THE YEAR ENDING

30TH JUNE 1912.



CALCUTTA :

THE BENGAL SECRETARIAT BOOK DEPÔT.

1913.

[*Price—Indian, 2 annas; English 3d.*]

DEPARTMENT OF AGRICULTURE, BENGAL.

ANNUAL REPORT

OF THE

CHINSURAH FARM

FOR THE YEAR ENDING

30TH JUNE 1912.



CALCUTTA :

THE BENGAL SECRETARIAT BOOK DEPÔT.

1913.

Published at the BENGAL SECRETARIAT BOOK DEPÔT,
Writers' Buildings, Calcutta.

OFFICIAL AGENTS.

In India—

MESSRS. THACKER, SPINK & Co., Calcutta and Simla.
MESSRS. NEWMAN & Co., Calcutta.
MESSRS. HIGGINBOTHAM & Co., Madras.
MESSRS. THACKER & Co, LD., Bombay.
MESSRS. A. J. COMBRIDGE & Co., Bombay.
THE SUPERINTENDENT, AMERICAN BAPTIST MISSION PRESS, Rangoon.
MRS. RADHABAI ATMARAM SAGOON, Bombay.
MESSRS. R. CAMBRAY & Co., Calcutta.
RAI SAHIB M. GULAB SINGH & SONS, Proprietors of the Mufid-i-am Press,
Lahore, Punjab.
MESSRS. THOMPSON & Co., Madras.
MESSRS. S. MURTHY & Co., Madras.
MESSRS. GOPAL NARAYAN & Co., Bombay
MESSRS. B. BANERJEE & Co., 25, Cornwallis Street, Calcutta.
MESSRS. S. K. LAHIRI & Co., Printers and Booksellers, College Street, Calcutta.
MESSRS. V. KALYANARAM IYER & Co., Booksellers, etc., Madras.
MESSRS. D. B. TARAPÖREVALA SONS & Co., Booksellers, Bombay.
MESSRS. G. A. NATESAN & Co., Madras.
MR. N. B. MATHUR, Superintendent, Nazir Kanum Hind Press, Allahabad.
THE CALCUTTA SCHOOL BOOK SOCIETY.
MR. SUNDER PANDURANG, Bombay.
MESSRS. A. M. & J. FERGUSON, Ceylon.
MESSRS. TEMPLE & Co., Madras.
MESSRS. COMBRIDGE & Co., Madras.
MESSRS. A. CHAND & Co., Lahore.
BABU S. C. TALUKDAR, Proprietor, Students & Co., Cooch Behar.
MESSRS. RAMCHANDRA GOVIND AND SON, Booksellers and Publishers, Kalbadevi,
Bombay.
MESSRS. BUTTERWORTH & Co (INDIA), LD., Calcutta.
THE WELDON LIBRARY, 18-5, Chowringhee Road, Calcutta.

In Great Britain—

MESSRS. A. CONSTABLE & Co., 10, Orange Street, Leicester Square, London, W.C.
MESSRS. GRINDLAY & Co., 54, Parliament Street, London, S.W.
MESSRS. KEGAN, PAUL, TRENCH, TRÜBNER & Co., 68-74, Carter Lane,
London, E.C.
MR. B. QUARITCH, 11, Grafton Street, New Bond Street, London, W.
MESSRS. W. THACKER & Co., 2, Creed Lane, Ludgate Hill, London, E.C.
MESSRS. P. S. KING & SON, 2 & 4, Great Smith Street, Westminster, London, S.W.
MESSRS. H. S. KING & Co., 65, Cornhill, London, E.C.
MR. B. H. BLACKWELL, 50-51, Broad Street, Oxford.
MESSRS. DEIGHTON BELL & Co., Trinity Street, Cambridge.
MR. T. FISHER UNWIN, 1, Adelphi Terrace, London, W.C.
MESSRS. LUZAC & Co., 46, Great Russell Street, London, W. C.
MESSRS. OLIVER AND BOYD, Tweeddale Court, Edinburgh.
MESSRS. E. P. NSONBY, LIMITED, 116, Grafton Street Dublin.

On the Continent—

MESSRS. R. FRIEDLÄNDER & SOHN, 11, Carlstrasse, Berlin, N.W., 6.
MR. OTTO HARRASSOWITZ, Leipzig, Germany
MR. KARL W. HIERSEMANN, 29, Königstrasse, Leipzig, Germany.
MR. ERNEST LEROUX, Rue Bonaparte, Paris, France.
MR. MARTINUS NIJHOFF, The Hague, Holland.

CONTENTS.

	PAGE.
1. Introduction	1
2. Situation and brief history	1
3. Area	2
4. Irrigation	2
5. Character of the soil	3
6. Meteorology	3
7. Operations during the year—	
A.—General crops grown	4—10
B.—Experimental work	4—10
C.—Conservation of cattle dung	4—10
D.—Distribution of seed	4—10
E.—Practical training of young men	4—10
8. Receipts and Expenditure	11
9. Acknowledgments	11
10. Management and Inspection	12—17
11. Appendix—Programme of Work, 1912-13	12—17

ANNUAL REPORT OF THE CHINSURAH FARM FOR THE YEAR ENDING 30TH JUNE 1912.

INTRODUCTION.

THIS station is situated to the west of the East Indian Railway between the Chinsura and Hooghly railway stations. Area is 210 acres and is typical of Lower Bengal. Soil is clayey and capable of growing most crops well. As yet no arrangement has been made for irrigation. Excepting the lifting of water from one tank and a few hollows which, with the present arrangement of channels, can only be employed economically on the neighbouring plots, the crops have to depend upon natural rainfall.

This is the system adopted all over Lower Bengal and, if we only had a small area to deal with, nothing further would be required. It is hoped that during the next cold weather at least Rs. 5,000 will be available to allow of water storage areas, drainage and irrigation channels being made all over the farm to divide the area into small uniform blocks that will allow of easy and economic irrigation in October and November to assure the paddy crop.

There is no well at this farm. This is an evil that should be remedied without any delay. The District Engineer was sanctioned funds last year for this well and he commenced the work, but for some reason the work has not yet been completed.

Excellent crops of paddy, jute and sugarcane have been grown at this farm. This station acts also as a centre for distribution of seeds, manures and implements. Government bears all expenses.

SITUATION AND BRIEF HISTORY.

The farm is situated in latitude 22°53' N. and longitude 85°27' E. and to the west of the East Indian Railway line between the Chinsura and Hooghly railway stations. It is 38 feet above sea-level. The station was opened in 1908 and is representative of Lower Bengal. There are still some permanent improvements to be made before the farm can be said to be laid out properly.

AREA.

The area is 202·3 acres, excluding the steading and tank on the south-west corner. Of the 202·3 acres nearly 170 acres are under cultivation and the remainder is occupied by roads channels, tanks and *jhils*.

IRRIGATION.

The farm has to depend almost entirely on the natural rainfall. The tank and the *jhil* on the eastern side supply some water for irrigation during winter, but they dry up during the hot months, and with the present channels the water can only be employed economically on neighbouring plots.

CHARACTER OF THE SOIL.

The soil is mostly clay loam, excepting a piece of land on the south-west corner which is loamy. The soil is representative of the Gangetic alluvium in Bengal on the west side of the river Hooghly.

The following table shows analyses of the soil and sub-soil of this farm:—

	High land, soil No. 1 A, Lab. No. 144.	High land, sub-soil No. 1 B, Lab. No. 145.	Block A, soil (field No. 2 A), Lab. No. 146.	Block A, sub-soil 2 B, Lab. No. 147.	Medium soil, No. 3 A, Lab. No. 148.	Medium sub-soil No. 3 B, Lab. No. 149.	Low land soil, Field No. 4 A, Lab. No. 150.	Low land sub-soil, No. 4 B, Lab. No. 151.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Insoluble silicate and silica.	77·25	...	71·20	...	67·00	...	63·38	...
* Combined water and organic matter.	5·29	...	5·05	...	8·31	...	9·59	...
Ferrie oxide and alumina.	14·77	...	20·14	...	21·48	...	22·84	...
Lime	·96	...	1·53	...	1·90	...	1·57	...
Magnesia... ..	·31	...	·26	...	·55	...	1·75	...
Potash	·85	1·63	1·29	1·22	1·31	1·17	1·51	1·01
Soda	·55	...	·39	...	·27	...	·27	...
† Phosphoric anhydride.	·12	·15	·22	·10	·06	·12	·09	·12
Total ...	100·00	...	99·98	...	100·00	...	100·00	...
* Containing nitrogen	·09	·073	·091	·088	·091	·064	·134	·122
† Containing phosphoric anhydride soluble in 1 per cent., citric acid solution.	·014	...	·016	...	·005	...	·007	...

From the above figures it will be seen that the soil is a very fertile one.

METEOROLOGY.

The following table shows the rainfall on the farm for the year under report in comparison with the normal average of the Sadar, which is 2 miles away. It will be seen that the total rainfall in the year under report was about 15 inches below normal and was badly distributed, there being excessive rainfall in June and insufficient in July, August and September. The consequence was that jute could not be timely weeded and became waterlogged in June. There was also too little rainfall for aman paddy which gave a comparatively poor outturn. Accordingly the year was unfavourable for both jute and paddy:—

MONTHS.			Normal average rainfall at Sadar.	Actual rainfall, 1911-12.	Actual number of rainy days.
1911.					
April	...	...	2.46	1.71	3
May	...	...	5.85	2.99	7
June	...	...	10.56	12.12	17
July	...	...	11.28	8.18	17
August	...	...	11.64	6.76	17
September	...	...	8.40	4.20	12
October	...	...	4.09	2.54	8
November	...	...	0.66	0.49	3
December	...	...	0.19	Nil	Nil
1912.					
January	...	...	0.88	0.10	1
February	...	...	1.20	0.97	3
March	...	...	1.58	3.87	7
Total	...	...	58.29	43.93	95

The following table shows the maximum and minimum temperature in Fahrenheit for the year, the highest temperature being 106° in the month of May and the lowest 49° in the month of December.

MONTHS.		Average maximum outside.	Average minimum outside.	Average maximum inside.	Average minimum inside.
1911.					
April	...	100	80	90	83
May	...	101	82	91	85
June	...	90	83	85	83
July	...	94	82	89	83
August	...	94	82	88	82
September	...	95	81	88	81
October	...	96	76	87	78
November	...	91	68	80	71
December	...	82	54	68	56
1912.					
January	...	86	58	71	63
February	...	90	65	78	69
March	...	96	71	85	76

OPERATIONS DURING THE YEAR.

A.—*General crops grown.*—The following table gives the area, total outturn and yield per acre of crops grown for seed supply and other purposes:—

Crop.	Area.	Total outturn.	Yield per acre.	REMARKS.
	Acre.	Mds.	Mds.	
Aus paddy	2	7½	4½	Season unsuited.
Jute	14	154½	11	Poor.
Dhaincha	21	155½	7½	Good.
Aman paddy	58	945½	16½	Fair.
Sann hemp	10	23	2⅝	Suffered from the attack of hairy caterpillars.
So-beans	2½	38	12½	

Crop.	Area.	Total outturn.	Yield per acre.	REMARKS.
	Acre.	Mds.	Mds.	
Sugarcane	1	15	15	Ratooned very poor.
Khesari	12	52½	4½	Broadcasted on standing Aman paddy.
Gram	10	1	½	Ditto ditto. All failed.
Linseed	11	1½	½	Broadcasted on standing Aman paddy. All failed.
Gram and linseed mixed.	3	{ 13½ 1½	{ 4½ ½	Rabi crops are unsuited to this locality under present conditions.
Wheat	1	2½	2½	
Mustard	3	3½	1	
Lentil	3	6	2	Suffered for want of moisture.

B.—Experimental work—

(a) Aman paddy.*

(ā) Sugarcane.

(b) Aus paddy.†

(e) Soy-beans.

(c) Jute.

(f) Cotton.

(a) Aman paddy—

(i) Manure.

(iv) Seedling.

(ii) Variety.

(v) Spacing.

(iii) Plough.

(vi) Broad-casting.

(vii) Hydraulic, viz.—

(1) Irrigation *vs.* no irrigation.

(2) 3" water *vs.* 6" water.

Of these the last two (vi) and (vii) failed, on account of want of water-supply.

(i) *Manure experiments on aman paddy.*—

The following table shows the manures tried on aman paddy and the results obtained for the last three years. The results shown for each year is the average of two plots. In order to understand the results it should be remembered that in the first year, *i.e.*, 1909-10, the rainfall was sufficient and the outturns were better than those of the last two years during which rainfall was much below normal. In the first year the unmanured plots yielded outturns that were rather high for such plots

showing that the land was fairly rich when experiments were begun :—

TABLE III.

Serial No.	MANURES PER ACRE.	AVERAGE OUTTURN PER ACRE.					
		1909-10.		1910-11.		1911-12.	
		Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
		Mds.	Mds.	Mds.	Mds.	Mds.	Mds.
1	Unmanured	27½	36	13½	21	13½	19½
2	Cowdung 50	28½	38½	18½	21½	23½	35½
3	„ 100	31½	47½	18½	20½	18½	25½
4	„ 50	33	52½	18½	23½	22½	33
	Super 3						
	Saltpetre 1	30½	50	17½	23½	18½	42½
5	Bonemeal 3						
	Saltpetre 1						
6	Dhaincha green manure ...	*26½	34½	21½	23½	16½	23
7	Sann hemp green manure ...	*24½	30½	27	30	16½	23½
8	Unmanured	30	42½	14½	16½	19	28½

* These, having been sown late, had to be ploughed in before they were sufficiently grown up.

(ii) *Variety experiment.*—During the first two years nine varieties of paddy were tried. In 1911 the experiment was restricted to the five superior varieties. The following table shows the results for the last three years:—

TABLE IV.

Serial No.	NAME OF VARIETY.	AVERAGE OUTTURN PER ACRE, 1909-10.		* OUTTURN PER ACRE, 1910-11.		AVERAGE OUTTURN PER ACRE, 1911-12.	
		Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
		Mds.	Mds.	Mds.	Mds.	Mds.	Mds.
1	Dadkhani	19½	24	9½	16½	17½	25½
2	Badshabhoge	20½	35	12½	17½	20½	37
3	Banktulsi	18½	29½	9½	15½	18½	31½
4	Hatisal	19	26½	10½	16½	12½	36
5	Nagra	29½	32½	9	16½	19½	29½

* Nagra is the standard paddy of this locality and is cultivated on by far the largest area. Its grain is white and of medium quality. Hatisal and Banktulsi are finer and sell higher than Nagra by about 2 annas per maund of paddy. Dadkhani and Badshabhoge sell 4 annas higher.

† In 1910-11 the duplicate plots could not be transplanted.

(iii) *Plough experiments*.—The Sibpur, Meston, Hindusthan and local ploughs were compared for the last three years and results are shown below:—

TABLE V.

Serial No.	NAME OF PLOUGH.	AVERAGE OUTTURN PER ACRE, 1909-10.		* OUTTURN PER ACRE, 1910-11.		AVERAGE OUTTURN PER ACRE, 1911-12.	
		Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
		Mds.	Mds.	Mds.	Mds.	Mds.	Mds.
1	Local	26½	42½	15	15½	18½	30½
2	Hindusthan... ..	27½	37½	14½	15½	15½	23½
3	Meston	28½	35	13½	55½	13½	19½
4	Sibpur	27½	37½	16½	16½	11½	17½

* In 1910-11 the duplicate plots could not be transplanted.

(iv) *Seedling experiment*.—The transplanting of one, two and four seedlings was compared during the last three years. The results confirm what was said last year, *i.e.*, in order that one seedling may give its maximum return transplanting should be done sufficiently early to allow the plant to tiller to its greatest capacity. To determine up to what date transplanting one seedling may succeed an experiment is being tried this year. (See Appendix.) In the first year one seedling gave the highest outturn, but in the second year, when transplanting had to be postponed to the end of August, four seedlings gave the highest outturn. Last year transplanting was done in July, and one seedling again gave the highest outturn. The following table shows the average results for 1909-10 and 1911-12 and of original plots only for 1910-11 in which year the duplicate plots could not be transplanted:—

TABLE VI.

Serial No.	Number of seedlings transplanted 10 inches apart.	AVERAGE OUTTURN PER ACRE, 1909-10.		OUTTURN PER ACRE, 1910-11.		AVERAGE OUTTURN PER ACRE, 1911-12.	
		Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
		Mds.	Mds.	Mds.	Mds.	Mds.	Mds.
1	1 Seedling	31½	33½	8½	9½	19	39
2	2 Seedlings	25½	31½	12	14½	16	31½
3	4 Seedlings	24½	28½	13½	16½	17½	36½

(v) *Spacing experiments.*—Two spacings were tried in transplanting aman paddy, one 6 inches apart both ways and another 10 inches apart. In one set 1 seedling was transplanted and in another set 2 seedlings. The results for 1909-10 and 1911-12 are given below. In 1910-11 this experiment could not be tried on account of short rainfall :—

TABLE VII.

Serial No.	PARTICULARS.	AVERAGE OUTTURN PER ACRE.					
		1909-10.		1910-11.		1911-12.	
		Grain.	Straw.	Grain.	Straw.	Grain.	Straw.
		MLS.	MDS.			MDS.	MDS.
1	1 Seedling 6 inches apart ...	26½	36½	} Could not be tried. }		17½	33
2	" 10 " " ...	28½	34½			17½	23½
3	2 Seedling 6 " " ...	23½	33½			16½	33½
4	" 10 " " ...	24½	31½			15½	22½

(b) & (c) *Experiments on jute and aus paddy.*—During the year under report experiments on jute and aus paddy failed owing to ill-distributed rainfall.

(d) *Sugarcane.*—A manure experiment was tried on the khar; variety of sugarcane. It has been tried twice—once in 1910 and again in 1911.

TABLE VIII.

Serial No.	MANURES PER ACRE.			OUTTURN PER ACRE.	
				1910-11.	1911-12.
1	Cowdung	100 maunds ...	} 41½		52½
	Sulphate of ammonia	2 " ...			
	" " potash	2 " ...			
	Super ...	3 " ...			
2	Cowdung	100 " ...	} 40		57½
	Sulphate of ammonia	2 " ...			
	Super	3 " ...			

Serial No.	MANURES PER ACRE.		OUTTURN PER ACRE.	
			1910-11.	1911-12.
3	Cowdung	100 maunds ...	30 $\frac{5}{8}$	43 $\frac{5}{8}$
	Sulphate of potash	2 „ ...		
4	Cowdung	100 „ ...	30	46 $\frac{3}{8}$
	Super	3 „ ...		
5	Cowdung	100 „ ...	35 $\frac{3}{4}$	54 $\frac{7}{8}$
	Super	3 „ ...		
	Saltpetre	2 „ ...		

(e) *Soy-beans*.—A variety experiment on soy-bean was tried here during the year under report. Three varieties were tried. One was called the Kalimpong white, as the seeds were white in colour and were supplied by the Kalimpong Farm. The other two were sent for trial by the Economic Botanist to the Government of Bengal at Sabour. Of these one was white and the other black. These were therefore called Sabour white and Sabour black, respectively. Both these varieties were smaller in size than the Kalimpong variety. The plants also were different. The Kalimpong variety was erect and attained a height of 4 feet, while both the Sabour varieties were creepers many feet long. The result of the experiment is shown below. They were tried both on clay loam and loam, and sown on the former in June and on the latter in July. The Kalimpong variety ripened in November and the others in December:—

TABLE IX.

Serial No.	VARIETY.	OUTTURN PER ACRE IN MAUNDS ON—	
		Clay Loam.	
1	Kalimpong white ...	12 $\frac{1}{2}$	*6 $\frac{3}{4}$
2	Sabour black ...	8 $\frac{1}{2}$	10 $\frac{7}{8}$
3	„ white ...	8 $\frac{1}{2}$	12 $\frac{1}{4}$

* The germination of this plot was defective.

(r) *Cotton*.—Buri and Cambodia were tried during the year under report on a very small scale. Buri gave an outturn of $12\frac{3}{8}$ maunds of seed cotton per acre and Cambodia $9\frac{5}{8}$ maunds. Both, however, were uneconomical.

C. *Conservation of cattle dung*.—The cattle dung is conserved on this farm in a series of open *cutcha* pits 20' x 20' x 4'. A *cutcha* shed was erected over it to protect it from sun and rain. Both the pits and the shed were constructed at a very small cost, such as any cultivator might afford. Each pit was constructed by digging 20' x 20' 2 feet deep and throwing up the earth dug up in bunds 2 feet high all round so that the pit became 4 feet deep half above and half underground. A sample of dung stored at the farm on analysis was found to contain .88 per cent. of nitrogen. This manure has not yet been compared with manure stored according to the method of the raiyat.

D. *Distribution of seeds*.—The following seeds were distributed from this farm during the year under report:—

			Mds.
1.	G. P. fine aus paddy	...	3
2.	Jute seed	...	$3\frac{1}{4}$
3.	Dhaincha seed	...	$145\frac{1}{4}$
4.	Banktulasi	...	$8\frac{1}{8}$
5.	Dadkhani	...	$8\frac{1}{4}$
6.	Badshabhog	...	$14\frac{3}{4}$
7.	Bankui paddy	...	$6\frac{1}{2}$
8.	Lentil	...	$2\frac{1}{4}$
9.	Mustard	...	$2\frac{1}{2}$
10.	Seed cotton	...	$0\frac{3}{4}$
11.	Gram	...	10
12.	Wheat	...	$\frac{5}{8}$
13.	Sann hemp seed	...	6
14.	Soy-bean	...	1

E. *Practical training of young men*.—As yet no one has come for practical training at this station. Government has been moved to sanction 6 apprentices for this farm.

RECEIPTS AND EXPENDITURE.

The total receipts for the period 1st July 1911 to 30th June 1912 were Rs. 5,952-15-3, of which Rs. 377-4 of seeds were supplied to Central Seeds Store and other Government farms for which no cash recovery was made. The total expenditure excluding the pay of the Superintendent, overseers and clerk was Rs. 7,661-1-3, of which Rs. 812-15-6 was for laying out.

ACKNOWLEDGMENT.

The station is indebted to C Somers Taylor, Esq., B.A., Agricultural Chemist to the Government of Bihar, for all analyses done during the year.

MANAGEMENT AND INSPECTION.

This station belongs entirely to Government and is managed by the Agricultural Department, Bengal. During the period under report Babu Tara Nath Roy was the Superintendent in charge. The Deputy Director of Agriculture, Bengal, made 14 inspections, and the Director of Agriculture, Bengal, visited the station three times.

F. SMITH,

Deputy Director of Agriculture, Bengal.

APPENDIX.

PROGRAMME OF WORK, 1912-13.

KHARIF.

			Acres.
I.—Aus paddy	...	...	·8
II.—Aman paddy	...	...	100·0
III.—Jute	...	...	25·0
IV.—Dhaincha	...	...	50·0
V.—Sann hemp	...	...	10·0
VI.—Soy-beans	...	...	2·0
VII.—Sugarcane	...	...	2·6
			<hr/>
			190·4
			<hr/>

DETAILS OF KHARIF.

I.—Aus paddy experiment ... total area = ·8 Acre

Broad-casting

	Acres.
C. P. fine white-awned aus ...	·2

versus

Coarse aus paddy ...	·2
----------------------	----

Transplanting.

	Acres.
C. P. fine-awned aus ...	·2
Coarse aus paddy ...	·2
<hr/>	
	·8
<hr/>	

II.—Aman paddy experiments—

(a) Manurial on nagra paddy ... total area = 4 acres.

	Acres.
(1) Unmanured ...	·2 in duplicate.
(2) 50 maunds cowdung per acre ...	·2
(3) 100 " " " ...	·2

				Acre.
(4)	50 maunds	cowdung	per acre	... .2
	3	„	super	... .2
	1	„	saltpetre	... ..
(5)	3	„	bonemeal	... .2
	1	„	saltpetre	... ..
(6)	Dhaincha	green manured	„	... .2
(7)	Sann hemp	green manured	„	... .2
(8)	Nitrolim	2 maunds	„	... .2
(9)	Castor-cake	5 maunds	„	... .2
(10)	Unmanured		„	... .2
				<hr/> 2.0 <hr/>

(b) Variety in duplicate ... total area = 2 acres (manured with 1 maund nitrolim per acre)—

				Acre.
(1)	Dadkhani	...	...	... .2
(2)	Badshabhog	...	...	... .2
(3)	Banktulsi	...	...	... .2
(4)	Hatisal	...	...	... .2
(5)	Nagra	...	...	... .2
				<hr/> 1.0 <hr/>

(c) Seedling experiment in duplicate ... total area = 1.2 acre—

				Acre.
(1)	1 seedling	10 inches apart	...	... .2
(2)	2 seedlings	10 „ „	...	... .2
(3)	4 ditto	10 „ „	...	... .2
				<hr/> .6 <hr/>

(d) Spacing experiment in duplicate ... total area = 1.2 acre—

				Acre.
(1)	1 seedling	6 inches apart	...	... .2
(2)	1 ditto	10 „ „	...	... .2
(3)	1 ditto	14 „ „	...	... .2
				<hr/> .6 <hr/>

(e) Manurial (selected) on acre plots .. total area = 5 acres—

	Acre.
(1) Unmanured	1
(2) 200 mds. cowdung per acre	1
(3) Dhaincha green manured	1
(4) Sunn hemp green manured	1
(5) Nitrolim 2 maunds per acre	1
	—
	5
	—

(f) Transplanting 1 seedling at different times ... total = area
1 4 acre (manured with 1 maund nitrolim per acre)—

	Acre.
(1) 1 seedling transplanted 1st week of July ...	·2
(2) Ditto ditto 2nd ditto ...	·2
(3) Ditto ditto 3rd ditto ...	·2
(4) Ditto ditto 4th ditto ...	·2
(5) Ditto ditto 1st week of August ...	·2
(6) Ditto ditto 2nd ditto ...	·2
(7) Ditto ditto 3rd ditto ...	·2
	—
	1·4
	—
	14·8
	—

Demonstration total area = 4 acres.

Manurial—
Acres.

(1) Dhaincha green manured	1
(2) 100 maunds cowdung per acre	1

Seedlings—

(1) Seedling	1
(2) 3 or 4 seedlings transplanted according to local practice	1

Non-experimental total area = 81·2 acres.
 Non-experimental aman paddy—

				Acres.
(1) Nagra ... ..	...	...	...	25
(2) Banktulsi ... ..	...	...	...	25
(3) Dadkhani .. ...	...	...	...	15
(4) Badshabhög ... ..	...	...	...	5
(5) Hatisal ... ..	...	...	...	11·2
				<hr/>
				81·2

III.—Jute.

(a) Experiment manurial in duplicate on local jute ... total area
 = 2 acres.

				Acres.
(1) Unmanured ... ..	...	...	...	·2
(2) 100 maunds cowdung per acre			...	·2
(3) 10 maunds castor-cake per acre			...	·2
(4) 50 maunds cowdung per acre			...	·2
3 „ super				
1 maund saltpetre				
(5) Unmanured ... ..	...	...	...	·2
				<hr/>
				1·0

Schröder, Smidt's manurial ... total area = ·8 acre.
 Series A—

				Acres.
(1) Unmanured				
(2) 200 lbs. muriate of potash per acre			...	·1
200 „ super				
100 „ sulphate of ammonia.				
(3) 200 „ super ... ..	...	...	...	·1
100 „ sulphate of ammonia.				
(4) 200 „ muriate of potash ...	...	...	...	·1
				<hr/>
				·4
				<hr/>

Series B—

				Acre.
(1)	Unmanured	...	...	·1
(2)	100 lbs. muriate of potash	...	...	·1
	100 „ super.			
	50 „ sulphate of ammonia.			
(3)	100 „ super			
	50 „ sulphate of ammonia	...		·1
4)	100 „ muriate of potash	...	...	·1
				—
				·4
(c)	Variety	...	... total area =	·4
				Acre.
(1)	Local red	...	...	·1
(2)	Deswal	...	...	·1
(3)	Kakya Bombai	...	...	·1
(4)	Dhaleswar (from Dacca)	...	...	·1
				—
				3·2 acres.
	Jute non-experiment	...	... 21·9	„
				—
				25·1
				„
				—

IV.—Dhaincha ... total area = 50 acres (of which as much as possible to be green manured and the rest to be kept for seed).

V.—Sann hemp ... total area = 10 acres (of which as much as possible to be green manured and the rest to be kept for seed).

VI.—Soy-beans—

Experimental variety ... total area = ·6 acre.

				Acre.
(1)	Kalimpong white	...	...	·2
(2)	Black Sabour	...	...	·2
(3)	White „	...	...	·2
				—
				·6
				—

Non-experimental soy-beans ... 1.4 acre.

2.0 „

VII.—Sugarcane—

Experiment manurial ... total area = .5 acre.

Acre.

(1) Cowdung ... 100 maunds per acre1

Sul. of Am. ... 2 „ „

„ „ Pot. .. 2 „ „

Super ... 3 „ „

(2) Cowdung ... 100 „ „1

Sul. of Am. ... 2 „ „

Super ... 3 „ „

(3) Cowdung 100 „ „1

Potash ... 2 „ „

(4) Cowdung ... 100 „ „1

Super ... 3 „ „

(5) Cowdung ... 100 „ „1

Super ... 3 „ „

Saltpetre ... 2 „ „

.5

(b) Variety ... total area = 1 acre.

(1) Shamshara.

(2) Java.

(3) Mauritius red.

(4) Khari.

(c) Ratooned sugarcane ... = .6 acres

2.1 „

F. SMITH,

Deputy Director of Agriculture, Bengal.

